

Module Name	Food Chemistry and Biochemistry
Module Level, if applicable	Intermediate
Code if Applicable	320221188
Subtitle, if applicable	-
Courses, if applicable	320221188 Food Chemistry
Semester(s) in which the module is taught	3 rd
Person responsible for the module	Prof. Dr. Ir. Noor Harini, MS.
Lecturer	Prof. Dr. Ir. Noor Harini, MS.,
Language	Indonesian
Relation to curriculum	Compulsory Course for undergraduate program in the Food Technology Department, Faculty of Agriculture and Animal Science
Type of teaching	Lecture, Project
Workload	<ul style="list-style-type: none"> ● Lecture: 2 SKS X 50 minutes X 16 weeks ● Project: 2 SKS X 60 minutes X 16 weeks ● Independent learning: 2 SKS X 60 minutes X 16 weeks
Credit points	2 SKS X 1.5 = 3.00 ECTS
Requirements according to the examination regulations	<ol style="list-style-type: none"> 1. Registered in this course 2. Minimum 80% attendance in this course
Recommended prerequisites	Organic Chemistry, Food Ingredient Knowledge
Module Objectives (Intended learning outcomes)	<p>On successful completion of this course, student should be able to :</p> <ul style="list-style-type: none"> ● Explain and give example about case and scope food chemistry (definition; the linkage of organic compounds in food) ● Identify and determine functional groups, chemical bonds in food; types of organic acids and implementation in food ● Explain about chemical and physical study of water (the role of water in food, polarity properties of water, hydrogen bonds in water, ph of water, water phase, type of water in food, relationship of water content (ka), aw (water activity) and rh (relative humidity); absorption, desorption; msl and wsi curves.) ● Explain water process / reaction in food (retrogradation, synerresis, browning,

	<p>caramelization)</p> <ul style="list-style-type: none"> ● Explain carbohydrates (source, classification, structure, physicochemical properties), monosaccharides and disaccharides (structure, physicochemical properties, chemical reactions), complex carbohydrates (oligosaccharides and polysaccharides) chemical structure, physicochemical properties ● Explain lipids (source, classification, structure, physicochemical properties), simple and complex / compound lipids), types of lipids in foodstuffs, the process of changing lipid components due to food processing technology appropriate technology to reduce rancidity ● Explain proteins (the structure of protein molecules (primary, secondary, tertiary, quaternary) in foodstuffs, types of proteins in foodstuffs, the process of changing protein components due to food processing technology, such as denaturation, coagulation, etc., appropriate technology to improve food quality so that degradation does not occur) ● Explain fat-soluble vitamins (A,D,E,K) and water-soluble vitamins (B1, B2, B3, B5, B6, B7, B9, B12, C) (structure, physicochemical properties, sources and functions) ● Explain macro minerals (P, Ca, K, Na, Cl, S, Mg) and micro (Fe, I, Mn, Cu, Zn, Co, F, Sn, Cr), the process of changing macro and micro mineral components in food due to food processing technology
<p>Module Content</p>	<p>This course is a chemical technology-based course in food to prepare students to know chemical and functional properties discussing the concept of implementation and understanding of chemical compounds in foodstuffs about the main/macro components, namely water, carbohydrates, proteins and fats. In addition, it discusses micro components such as vitamins and minerals.</p>

	In addition, it also discusses the chemical structure, chemical character of food ingredients in an effort to improve the quality of food ingredients and their processed products
Study and examination requirements and forms of examination	<p>Cognitive: Midterm exam, Final exam, Quizzes, Assignments</p> <p>Psychomotor: Practice</p> <p>Affective: Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort.</p>
Media employed	Classical teaching tools with white board and power point presentation
Recommended Literature	<p>For Class</p> <p>A. Compulsory</p> <ol style="list-style-type: none"> 1. De Man, J.M. 1997. Kimia Makanan. Penerbit ITB. Bandung 2. Winarno, F.G. 2009. Kimia Pangan dan Gizi, Gramedia Pustaka Utama, Jakarta. 3. Keenan, Kleinfelter and Wood. 2007. Kimia untuk Universitas. Diterjemahkan oleh A.H. Pudjaatmaka. 4. Fennema. 2010. Food Chemistry. 5. Bennion. 2008. Chemistry of Food. 6. Tranggono dkk. 1990. Kimia, Nutrisi dan Pangan. PAU UGM Yogyakarta. 7. Geissman, and Crout.1969. Organic Chemistry os Secondary Plant Metabolism. Freeman, Cooper & Company, California-USA 8. Ketaren. 1986. Pengantar Teknologi Minyak dan Lemak Pangan. UI-Press, Jakarta 9. Rahayu, K. 1991. Bahan Ajaran : Teknologi Enzim. PAU Pangan dan Gizi UGM, Yogyakarta 10. Robinson, T. 1995. Kandungan Organik Tumbuhan Tinggi. Penerbit ITB Bandung 11. Sri Raharjo. 2004. Kerusakan Oksidatif Pada Makanan. PAU-UGM, Yogyakarta <p>B. Option</p> <ol style="list-style-type: none"> 1. Almtsier, S. 2003. Dasar Ilmu Gizi. PT. Gramedia Pustaka Utama. Jakarta 2. Djaelani, A. 2000. Ilmu Gizi Untuk

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3. Eskin, M. 1979. *Plant Pigment, Flavors and textures ;The Chemistry and Biochemistry of Selected Coumpounds*. Academic Press, san Francisco- New York. London
4. Hardjono S. 1996. Sintesis Bahan Alam. Gadjah Mada University Press. Yogyakarta.

Date of Last Amendment

22nd Agustus 2022